Nitocris to Amenemhat I. We pass to the Middle Empire.

Amenemhat I. built no pyramids, he added no embellishments to Memphis; but he took Heliopolis under his care, and now we first hear of Thebes.[1]

Usertsen I. built no pyramids, he added no embellishments to Memphis, but he also took Heliopolis under his care, and added obelisks to the temples, one of which remains to this day. Further, he restored the temple of Osiris at Abydos, and added to the temple of Amen-Rā at Thebes.[2]

Surely it is very noteworthy that the first thing the kings of the twelfth dynasty did was to look after the only three temples in Egypt of which traces exist, which I have shown to have been oriented to the solstice.

It is right, however, to remark that there seems to have been a mild recrudescence of pyramid building towards the end of the twelfth dynasty, and immediately preceding the Hyksos period, whether as a precursor of that period or not.

Usertsen's views about his last home have come down to us in a writing by his scribe Mirri:[3]—

"Mon maître m'envoya en mission pour lui préparer une grande demeure éternelle. Les couloirs et la chambre intérieure étaient en maçonnerie et renouvelaient les merveilles de construction des dieux. Il y eut en elle des colonnes, sculptées, belles comme le ciel, un bassin creusé qui communiquait avec le Nil, des portes, des obélisques, une façade en pierre de Rouou."

There was nothing pyramidal about this idea, but 150 years later we find Amenemhat III. returning both to the gigantic irrigation works and the pyramid building of the earlier dynasties.

The scene of these labours was the Fayyûm, where, to crown the new work, two ornamental pyramids were built, surmounted by statues, and finally the king himself was buried in a pyramid near the Labyrinth.

4.—*The Work of the Eighteenth Dynasty.*

The blank in Egyptian history between the twelfth and eighteenth dynasties is known to have been associated with the intrusion of the so-called Hyksos. It is supposed these made their way into Egypt from the countries in and to the west of Mesopotamia. It is known that they settled in the cities with east and west walls. They were finally driven out by Aahmes, the king of solstitial solar Thebes, who began the eighteenth dynasty.

In (*a*) I have shown what happened after the first great break in Egyptian history—a resuscitation of the solstitial worship at On, Abydos and Thebes.

I have next to show that precisely the same thing happened after the Hyksos period (Dyn. 13 (?) Mariette, 2233 Brugsch; Dyn. 18, 1703 B.C., Mariette) had disturbed history for some 500 years.

It is known from the papyrus Sellier (G.C. 257) that Aāhmes, the first king of the eighteenth dynasty, who re-established the independence of Egypt, was in reality fighting the priests of Soutekh in favour of the priests of Amen Rā, the solstitial solar god, a modern representative of Atmu of On.

Amen-Rā was the successor of Menthu, the successor of Atmu of On. So close was the new worship to the oldest at On, that at the highest point of Theban power the third priest of Amen took the same titles as the Grand Priest of On, "who was the head of the first priesthood in Egypt."[4] The "Grand Priest of On," who was also called the "Great Observer of Rā and Atmu," had the privilege of entering at all times into the *Habenben* or Naos. The priest Padouamen, whose mummy was found in 1891, bore these among his other titles.

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[1] Maspero, *op. cit.*, p. 112.
[2] Maspero, *op. cit.* p. 112.
[3] Maspero, *op. cit.* p. 113.
[4] Virey, New Gizeh Catalogue, p. 263.

The assumption of the title was not only to associate the Theban priesthood with their northern *confrères*, but surely to proclaim that the old On worship was completely restored.

5.—*The Work of the Twenty-fifth Dynasty.*

There was another invasion from Syria, which founded the twenty-second dynasty, and again the government is carried on in cities with east and west walls (Sais, Tanis, and Bubastis). The solstitial solar priests of Thebes withdraw to Ethiopia. They return, however in 700 B.C., drive out the Syrian invaders, and, under Shabaka and Taharga, found a dynasty (the twenty-fifth) at Thebes, and embellish the solstitial solar temples there.

6.—*Anthropological Evidence.*

It will be seen then that a general survey of Egyptian history does suggest conflict between two races, and this of course goes to strengthen the view that the temple building phenomena suggest two different worships, depending upon race distinctions.

We have next to ask if there is any anthropological evidence at our disposal. It so happens that Virchow has directed his attention to this very point.[1]

Premising that a strong race distinction is recognised between peoples having brachycephalic or short, and dolicocephalic or long, skulls, and that the African races belong to the latter group, I may give the following extract from his paper:—

"The craniological type in the Ancient Empire was different from that in the middle and new. The skulls from the Ancient Empire are brachycephalic, those from the new and of the present day are either dolichocephalic or mesaticephalic; the difference is therefore at least as great as that between the dolichocephalic skulls of the Frankish graves and the predominantly brachycephalic skulls of the present population of South Germany. I do not deny that we have hitherto had at our disposal only a very limited number of skulls from the Ancient Empire, which have been certainly determined; that therefore the question whether the brachycephalic skull-type deduced from these was the general or at least the predominant one cannot yet be answered with certainty, but I may appeal to the fact that the sculptors of the Ancient Empire made the brachycephalic type the basis of their works of art too."

It will be seen, then, that the anthropological as well as the historical evidence runs on all fours with the results to be obtained from such a study of the old astronomy as the temples afford us.

J. NORMAN LOCKYER.

NOTES.

ON Monday, May 29, the Duke of Connaught will open the new engineering and electrical laboratories at University College, London.

A GENERAL meeting of the members of the Federated Institution of Mining Engineers will be held in the rooms of the Institution of Civil Engineers, 25, Great George Street, Westminster, on Thursday, June 1, at 12 noon, and on Friday, June 2, at 10 a.m.

THE Niederrheinische Gesellschaft für Natur- und Heilkunden at Bonn, proposes to celebrate its seventy-fifth anniversary on July 2. A scientific meeting will be held in the forenoon in the music hall of the University of Bonn, and at one o'clock the members will dine together at the hotel "Zum Goldenen Stern." In the afternoon there will be an excursion to Rüngsdorf.

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[1] Prof. R. Virchow: "Land und Leute im alten und neuen Aegypten." *Verhandlungen der Gesellschaft für Erdkunde zu Berlin*, pp. 434-436, Band xv. No. 9.

CAPTAIN E. C. HORE, who was for many years in command of the mission steamer on Lake Tanganyika, and received in 1890 one of the Royal Geographical Society's awards for his observations on the physical geography of the lake, has arranged an interesting little exhibition at 48, Pall Mall, which will be formally opened tomorrow, May 19, at 4 p.m., when a number of distinguished African explorers and administrators will be present. The exhibition contains a number of African curios collected by Captain Hore, and models illustrating native life and industries in a very realistic manner. It will only be open for a few weeks, and is well worthy of a visit from all interested in the geography or in the future development of the region marked out by Nature as the future highway through the continent of Africa.

THE annual dinner of the Royal Geographical Society was held at the Whitehall Rooms, Hôtel Métropole, on Saturday, Sir M. E. Grant Duff in the chair. Among the toasts of the evening was that of "The Medallists Designate." In proposing this, the Chairman explained that the dinner usually took place on the evening of the anniversary meeting, but the rooms could not be obtained for that day, and therefore the medals had not yet been conferred. All would agree that the choice of the council had fallen upon very worthy recipients. The first was Mr. Selous, whom they welcomed that evening. The second medallist designate was Mr. Woodville Rockhill, an American diplomatist, who had made himself famous by his explorations in Western China and North-eastern Tibet. Mr. Selous, in responding, said that at a very early period of his African travels he had made sketch maps, and he had never ceased to do so in all the countries through which he had travelled. He had been able to make a pretty correct survey of Mashonaland, and he looked with the most intense pride and satisfaction to the fact that he had seen a British colony spring up in that country, which he was one of the first to explore. Lord Kelvin responded for "The Allied Sciences," proposed by Mr. Seebohm. Mr. W. T. Thiselton Dyer proposed "The Royal Geographical Society." The Chairman, in replying, said he looked back with pleasure upon the almost unclouded prosperity which the Society had enjoyed for the four years during which he had been President. Their numbers this year had sprung forward again, and their total number was close upon 3700.

THE *Botanisches Centralblatt* has published a full description of the newly established Biological Institute at Heligoland, which is now at full work. The Director is Prof. Heincke, with Dr. Hartlaub as assistant for zoology, and Dr. Ehrenbaum for the high-sea fisheries, while Dr. P. Kuckuck superintends the botanical investigations. Donations to the library are especially asked for.

M. DUCHARTRE has been elected President of the Botanical Society of France for the current year, with MM. Guignard, Clos, Poisson, and Zeiller as Vice presidents.

THE greater part of the Kew Bulletin for February and March, which has just been issued, consists of an account of the known habits and the economic treatment of the insect commonly known as the palm weevil, which during the last five or six years has been doing enormous injury to the industry of cocoa-nut palm growing in British Honduras. The paper cannot fail to be of service to planters engaged in this industry. The number contains also, besides miscellaneous notes, the fifth decade of new orchids.

THE London Botanical Field Class, which was established in 1891, will make seven field excursions during the present summer, the first of them taking place on May 27. The director is Prof. G. S. Boulger.

DURING the past week the day temperatures have generally been considerably above the average for the season, the readings at some of the central and southern stations exceeded 70°, and reached from 75° to 80° over our south-eastern and south-midland counties; but in some parts of the north and north-west the daily maxima have not reached 60°. During the first part of the period barometric depressions approached the north of Scotland and spread southwards, bringing light rains to the northern and western parts of the country; but the fall was below the average amount, while in the south and east of England no rain fell until the 15th inst. The long drought, which in many places was brought to a close on Monday by the advance of a subsidiary depression over the southern portion of the kingdom, had lasted in parts of Kent and Hampshire for fifty-eight days, during which time absolutely no rain fell there. Towards the close of the period the type of weather became very unsettled, and thunderstorms occurred in many parts, accompanied by rain or hail, but, with few exceptions, the fall up to Tuesday, the 16th inst., was not heavy. The *Weekly Weather Report* of the 13th inst. showed that the amount of bright sunshine was much above the average. In London it was 76 per cent. of the possible amount, which is higher than any percentage previously recorded in the metropolis since sunshine instruments were established in 1880. In the Channel Islands the percentage was as high as 88, and over England generally it ranged from 60 to 78 per cent.

THE report of the Kew Committee for the year 1892, the publication of which was noted in our last issue, states that the principal magnetic disturbances were recorded on February 13 and 14, March 6 and 12, April 26, May 18, July 16 and 17, and August 12. The most marked disturbance was that which commenced on February 13; the oscillations were of a more extended and violent character than any which have been recorded during the last ten years. The tabulations of the meteorological traces and other observations have been transmitted to the Meteorological Office, and detailed information of all thunderstorms has been forwarded to the Royal Meteorological Society. Sketches of sun-spots were made on 178 days; on no occasion during the year, when observations have been taken, has the sun's surface been found free from spots, and the number of new groups enumerated has largely increased. The number of instruments verified during the year was nearly 21,000, the great majority being clinical thermometers, and, in addition, a large number of watches have been examined.

THE Meteorological Council have just issued a summary of rainfall and mean temperature for the first quarter of the twenty-eight years 1866 to 1893, based upon the observations published in the *Weekly Weather Report*. The figures show some interesting details of the weather in each of the twelve districts into which the country is divided for the purpose of weather forecasts. In every district except the north of Scotland and the east of England there was a deficiency in the amount of rainfall. In the principal wheat-producing districts the greatest deficiency was in the Midland Counties, being 1·1 inch, and the east of Scotland 1·3 inch, while in the principal grazing, &c., districts the deficiency was still larger, being 2·0 inches in the south-west of England, and 2·7 inches in the north-west of England. The deficiency for the whole of the British Islands (omitting the Channel Islands and the North of Scotland) was 1·3 inch. The temperature in every district exceeded the mean, except the north of Scotland, where it just equalled it. The largest excess was 1°·3 in the north of Ireland, and 1°·2 in the north-east of England. The excess for the British Islands generally was 0°·8; the mean temperature for the last quarter, notwithstanding the severe cold experienced at the beginning of the year having been only just exceeded once in the last nine years.

THE first part of Prof. Newton's "Dictionary of Birds" which has long been announced as in preparation will be published next month. It is based upon the articles contributed by him to the ninth edition of the "Encyclopædia Britannica," but contains large numbers of others by himself and Dr. Gadow, the Strickland Curator at Cambridge, together with contributions by Mr. Lydekker, Prof. Roy, and Dr. Shufeldt. The work is to consist of four parts, and when complete will form a demy 8vo volume of about 1000 pages, copiously illustrated, and the publishers Messrs. Adam and Charles Black, promise the second part in October next.

IN the current number of the American *Journal of Science* Mr. Pupin gives the second part of his paper on electrical oscillations of low frequency and their resonance (see NATURE, April 20, 1893). This portion consists chiefly of a theoretical investigation of the rise of potential in a circuit which is in resonance with a periodical impressed electromotive force. This rise was shown in a very striking manner by connecting two large choking coils and a condenser in series with the secondary of a transformer, a Thomson electrostatic voltmetre being connected to the terminals of the condenser, and the core of one of the choking coils consisting of a movable bundle of solf iron wires. The frequency of the impressed electromotive force being about 100 per second, the capacity of the condenser was adjusted until the removal of the plug was accompanied by bright sparks, showing that resonance was near. Then the movable iron core was adjusted till the voltmetre gave the longest deflection obtainable. In this way a rise from 60 volts (generated in the secondary and indicated by a Cardew voltmetre) to about 900 volts was easily obtained. The rise of potential is practically confined to the condenser, there being, however, a large and rapid increase in the current on the approach of resonance, which increase can be studied in a rough way by the pull which the choking coil exerts on the movable iron core when this is being adjusted to give resonance.

THE question as to the cause of earth currents is one of considerable interest, and has not yet been satisfactorily answered. A paper read before the Institute of Electrical Engineers by Mr. O. E. Walker, giving a further account of his observations made in India seems to show, however, a clear connection between the variations in the earth currents and those of the atmospheric pressure. On account of the long periods of settled weather experienced in India, that country is particularly well suited for the investigation of any such relation. Observations were made on four lines, and show, in almost every case, that in the morning the current flows from the inland place of observation to the coast, while in the afternoon the direction is reversed. The maximum current in one direction occurs at 10 a.m. local time, this also being the time of the morning maximum reading of the barometer, while the maximum current in the opposite direction occurs at 3 p.m., the time of the afternoon minimum of the barometer. Another point of interest is that the maxima of the earth currents occur when the diurnal variation of the declination is zero.

ON a clear, cold, winter afternoon, about half an hour before sunset, a peculiar phenomenon of refraction of light can be witnessed on a fresh field of snow, which is described by Mr. Albert W. Whitney in the *American Journal of Science.* Two roughly V-shaped paths, of especial, though not exclusive brilliancy, open away from the observer and towards the sun. The apex of one is perhaps six feet away, its angle 90°; the apex of the other is perhaps fifteen feet away, its angle 60°. The light is not diffused, but made up of many separate brilliant points, glowing with prismatic colours. The paths are broad, several degrees in width, their inner margin being more sharply defined than their outer limit. Measurements with a sextant have shown that all the glowing points lie in the surfaces of two cones, whose axes pass through the sun and the eye of the observer, and whose angles are approximately 22° and 46°. Hence the paths are hyperbolas, and their visibility depends upon the altitude of the sun above the horizon. Mr. Whitney explains the phenomenon as analogous to that of halos. It is largely, perhaps mostly, due to frost crystals. They form more slowly, hence more regularly, than snow crystals. The fact that snow hyperbolas are usually more conspicuous in the late afternoon than in the early morning, may be explained by the frost crystals needing a certain amount of clearing up by sun and wind of minute secondary accumulations of frost upon themselves, to make them fit for transmitting light. Another interesting fact concerns the relation of the other limb of the hyperbola to that upon the snow. If the observer walks so as always to keep one certain point in the path of light, his track will be an hyperbola; if now, from the apex of the hyperbola which he has traced, he advances a distance equal to his height multiplied by the cotangent of the altitude of the sun plus half the vertical angle of the cone, the figure which he now sees and the figure which he has traced upon the snow are the two limbs of the same hyperbola.

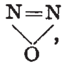
THE determination of the refractive index of the atmosphere has until recently been confined to the visible spectrum. Messrs. Kayser and Runge, in a communication to the Berlin Academy, describe a method of obtaining it for every portion of the photographic spectrum. If a prism is introduced between a Rowland concave grating and the sensitive plate, the rays are deflected, and the spectrum appears displaced on the plate. From the amount of this displacement and the distance of the prism from the plate it is easy to deduce the angle of deflection of the rays in question, and the refractive index of the prism. The prism used was hollow, made of copper and closed by quartz plates. The prism was filled with air under a pressure of about ten atmospheres Since the investigations of Mascart, Benoit, and Chappuis and Rivière have shown that the index of deviation of gases varies as the density, the refractive indices for air at zero and atmospheric pressure could be calculated from the results. Measurements were taken at seven different places along the spectrum, between wave lengths 563 and 236μμ. The refractive indices for some of the Fraunhofer lines thus obtained are the following:—

A	1·0002902
D	1·0002919
F	1·0002940
G	1·0002959
H	1·0002975
N	1·0003000
λ=236μμ	1·0003217

These values are for air under normal temperature and pressure but not for dry air. To correct for moisture the last decimal place must be increased by 3, thus giving for D, for instance, the value 1·0002922. In the hands of previous workers, the last two figures have varied between 11 (Lorenz) and 47 (Ketteler).

No fewer than six volumes containing French translations of writings by Mr. T. H. Huxley are now included in the "Bibliothèque Scientifique Contemporaine," issued by J. B. Baillière et Fils. The latest of these six volumes is a séries of essays, entitled "Science et Religion."

A volume embodying the meteorological results deduced from observations taken at the Liverpool Observatory during the years 1889-90-91 has been published by order of the Mersey Docks and Harbour Board.

THE atomic refraction of nitrogen, in the free state as gas and in the various types of nitrogen compounds, forms the subject of a communication to the *Berichte* by Prof. Brühl, of Heidelberg. The refractive power of free gaseous nitrogen has been determined with the highest attainable accuracy by Biot and Arago, Dulong, and other later observers, and the value of the atomic refraction, calculated from the mean of all these determinations, is 2·21. As the simplest type of nitrogen compound ammonia gas is next considered, in which the three affinities of the nitrogen are attached by single linkage to the three hydrogen atoms. The molecular refraction of ammonia calculated from its refractive index is 5·65. Now, if it is admitted that the hydrogen in this simple compound possesses the same atomic refraction (1·05 for sodium light) as in the free state and in other ordinary combinations, an admission in support of which Prof. Brühl has previously adduced a considerable amount of experimental evidence, then the atomic refraction of the nitrogen in ammonia is 2·50. The compounds of nitrogen with oxygen are next discussed. The atomic refraction of oxygen for sodium light is 2·05, the molecular refraction of the free gas O_2 being 4·09. If one calculates the molecular refraction of nitric oxide, NO, by adding together the atomic refractions of the gaseous elements 2·21 and 2·05, the number 4·26 is obtained. It is interesting to find that the molecular refraction of nitric oxide, calculated from the values obtained experimentally by Dulong and by Mascart for the refractive index of the gas, is very nearly the same, 4·47. Hence in nitric oxide both elements retain about the same refractive power as in the free state. The case of nitrous oxide, N_2O, however, is quite different and leads to an interesting conclusion. Its molecular refraction calculated from the observed refractive index of the gas is 7·58. The value, however, obtained by summation of the values of its components, 2 × 2·21 and 2·05, is only 6·47. The very considerable increase of 1·11 is due to the fact that we are here dealing with a case of double linkage, , the two nitrogen atoms being mutually attached by two of their affinities. Indeed the increase is probably more than this, for the atomic refraction of oxygen in organic compounds of this type has been found by Prof. Brühl to be less than the value above ascribed to it. The atomic refraction of the nitrogen in N_2O is therefore at least 2·77. It is thus found that nitrogen as singly linked in ammonia possesses an atomic refraction of 2·50, when doubly linked, as in nitrous oxide, 2·77, and when trebly linked, as it probably is in the free gas, 2·21. The value therefore increases with double linkage, but curiously enough diminishes again with treble linkage, unlike that of carbon, which still further increases with treble linkage, and showing that there is some very essential difference between the nature of the two elements. Prof. Brühl concludes his interesting paper by discussing the various values of nitrogen when combined with carbon. When it is attached with only one of its valencies to a carbon atom, as in the tertiary amines, its atomic refraction is found to be 2·90, a very high value, higher than that of the diazo nitrogen in nitrous oxide. When doubly linked to carbon, C : N, as in the oxims, there is a much larger increase still, the exact amount of which Prof. Brühl prefers to state after carrying out further determinations on a larger number of compounds. In case of cyanogen gas, N ⋮ C · C ⋮ N, where triple linkage of nitrogen occurs, there is also a very considerable increment (1·52) in refraction. In the case of hydrocyanic acid, however, the molecular refraction corresponds almost exactly with that calculated from the empirical formula HCN, showing that the cyanogen in this compound and in cyanogen gas are quite different in molecular structure, a point which Prof. Brühl hopes further to elucidate by observations of the refraction of the nitriles and other allied organic nitrogen compounds.

Erratum.—In our chemical note of last week (p. 39) $SObl_2$ and Hbl should read $SOCl_2$ and HCl.

NOTES from the Marine Biological Station, Plymouth.—Last week's captures include the Anthozoa *Gorgonia verrucosa* and *Caryophyllia Smithii*, the Nemertine *Drepanophorus rubrostriatus*, the Mollusca *Sepia rupellaria* (= *biserialis*), *Galvina tricolor* and *Antiopa cristata*, and the Ascidians *Corella larvæformis* and *Fragarium elegans*. Several swarms of the medusa *Obelia lucifera*, full-grown and mature, were taken in the townets during the latter half of the week. Polychæte larvæ, so abundant earlier in the year, are now very scarce. Zoææ of *Porcellana*, on the other hand, have increased in numbers, and every townetting contains a variety of Decapod larvæ in different stages of development. The Hydroids *Eudendrium capillare* and *Antennularia antennina*, and the Polychæte *Sabellaria spinulosa* are now breeding.

THE additions to the Zoological Society's Gardens during the past week include two Red-winged Parrakeets (*Aprosmictus erythropterus*, ♀ ♀) from Australia, presented by Mr. H. Goodchild; two Ravens (*Corvus corax*) British, presented by Mr. Philip A. Wilkins; a Ducorp's Cockatoo (*Cacatua ducorpsi*) from the Solomon Islands, presented by Mr. R. Armitage; a Changeable Lizard (*Calotes versicolor*) from Ceylon, presented by Mr. H. L. Gibbs; a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, a Common Peafowl (*Pavo cristatus*, ♂) from India, deposited; a Yellow-cheeked Lemur (*Lemur xanthomystox*) from Madagascar, eleven Green Lizards (*Lacerta viridis*) South European, purchased; a Senegal Touracon (*Corythaix persa*) from West Africa, received in exchange; a Japanese Deer (*Cervus sika*) born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE GREATEST BRILLIANCY OF VENUS.—Dr. G. Müller, whose work on the brightness of the major and some of the minor planets we referred to in this column two weeks ago (p. 15) contributes to *Astronomischen Nachrichten*, No. 3162, some interesting results with reference to the greatest brilliancy of Venus. That this planet does not appear brightest at the time of conjunction, but some days before or after, has been shown by the work of Halley, Lambert, &c., and the values, as obtained from their formulæ, are:—

Formula used.		The greatest brilliancy occurs at Angle of phase.		Elongation.		No. of days before or after inf. conj.		Greatest brilliancy.
		° ′		° ′				
Halley	...	117 56	...	39 43	...	36	...	4·263
Lambert	..	103 46	...	44 38	...	51	...	2·126
Bremiker	...	115 15	...	40 52	...	39	...	2·772
Seeliger	...	116 0	...	40 33	...	38	...	3·018

Referring to the curves of the observed and computed brightnesses, as here set forward by Dr. Müller, several important points may be noticed. In the former the maximum brightness takes place at a phase angle of 119°, decreasing very gradually to 140°, and after that more rapidly. At the maximum the curve is moderately flat, only a very small variation being noticed between position angle 100° and 140°, a period of 36 days.

Dr. Müller remarks that the statements of epochs given in the astronomical ephemerides have no practical interest. As an example showing the deviations of the values therein stated from those computed by his formula he works out the next epoch of the greatest brilliancy of Venus, which will be in inferior conjunction on February 15, 1894. The values for the brightness and the corresponding times result as follows:—

Jan. 9	...	0h. G.M.T.	...	$h = -4·3776$
10	...	,,	,,	...	$-4·3798$
11	...	,,	,,	...	$-4·3809$
12	...	,,	,,	...	$-4·3809$
13	...	,,	,,	...	$-4·3802$
14	...	,,	,,	...	$-4·3782$

which give for the epoch of greatest brilliancy January 11, 15h. M.T.G. The times of epoch, as given by the ephemerides, are:—

Berliner Ast. Jahrbuch	... ...	Jan. 8	...	16h. M.T.G.
Nautical Almanac ...	... ...	11	...	2h. ,,
Connaissance des Temps	... ...	12	...	1h. ,,

FINLAY'S PERIODIC COMET.—This comet, which was discovered by Finlay in 1886, is one, if not the only one, of the